

IN THE CLAIMS

1       1. (Currently Amended) A method for designing a system on a target device utilizing  
2 programmable logic devices (PLDs) with an electronic automation design tool (EDA),  
3 comprising:

4           having the EDA tool determine a first location on the PLD to place a user defined logic  
5 regiongenerating options for utilizing resources on the PLDs in response to user specified  
6 constraints for placement of the user defined logic region; and  
7           having the EDA tool determine a second location to place the user defined logic region,  
8 wherein the second location is determined refining the options for utilizing the resources on the  
9 PLDs where the options are independent of the user specified constraints for placement.

1       2. (Currently Amended) The method of Claim 1, wherein having the EDA tool  
2 determine the second locationrefining the options for utilizing the resources is performed in  
3 response to the first locationoptions not satisfying design parameters.

1       3. (Currently Amended) The method of Claim 1, wherein having the EDA tool  
2 determine the second locationrefining the options for utilizing the resources is performed in  
3 response to the first locationoptions not satisfying the user specified constraints.

1       4. (Currently Amended) The method of Claim 1, wherein having the EDA tool  
2 determine the second locationrefining the options for utilizing the resources is performed in  
3 response to having a threshold number of options generated.

1       5. (Currently Amended) The method of Claim 1, wherein having the EDA tool  
2 determine the second locationrefining the options for utilizing the resources is performed in  
3 response to a triggering event.

1       6. (Currently Amended) The method of Claim 1, further comprising ~~wherein generating~~  
2 ~~options for utilizing the resources on the target device comprises determining positions~~ locations  
3 to place components within user-defined logic regions on the target device.

1       7. (Currently Amended) The method of Claim 6, wherein determining positions to place  
2 the components is an iterative procedure that includes:  
3       selecting positions locations;  
4       evaluating the positions locations with a cost function; and  
5       accepting the positions locations if the cost function yields a desired value.

1       8. (Currently Amended) The method of Claim 6, wherein determining the  
2 positions refining the options for utilizing the resources on the target device independent of the  
3 user specified constraints comprises determining locations to place the components on the target  
4 device by removing constraints associated with the user-defined logic regions.

1       9. (Currently Amended) The method of Claim 1, further comprising ~~wherein generating~~  
2 ~~options for utilizing the resources on the target device comprises~~ determining routing resources  
3 to allocate to user specified signals on the target device in response to user specified routing  
4 constraints.

1       10. (Original) The method of Claim 9, wherein determining routing resources is an  
2 iterative procedure that includes:  
3       selecting routing resources;  
4       determining whether routing resource selections satisfy the user specified routing  
5 constraints; and

1           re-selecting routing resources if the routing resource selections do not satisfy the user  
2       specified routing constraints.

1           11. (Currently Amended) The method of Claim 9, wherein re-selecting the routing  
2       resourcesrefining the options for utilizing the resources on the PLD independent of the user  
3       specified constraints comprises determining routing resources to allocate to the user specified  
4       signals on the PLD by removing the user specified routing constraints.

1           12. (Currently Amended) A method for positioning components of a system onto a  
2       target device utilizing programmable logic devices (PLDs) using an electronic design automation  
3       tool, comprising:

4           having the EDA tool determine a first location on the PLD to place a user defined logic  
5       region in response to user specified constraints for placement of the user defined logic region;  
6           determining whether the user specified constraint is a soft constraint in response to the  
7       system not satisfying timing; and

8           having the EDA tool determine a second location to place the user defined logic region,  
9       wherein the second location is determined independent of the user specified constraints for  
10      placement if the user specified constraint is a soft constraint.

11           determining possible locations to place a user defined logic region on a target device;  
12           determining possible locations to place a component in response to constraints associated  
13      with the user defined logic region; and  
14           determining possible locations to move the component from the possible locations to  
15      place the component where the possible locations to move the component are independent of the  
16      constraints associated with the user defined logic region.

1       13. (Currently Amended) The method of Claim 12, wherein determining the  
2       firstpossible locations to place the user defined logic region comprises:  
3              assigning an initial location for the user defined logic region;  
4              moving the user defined logic region to a new location; and  
5              evaluating a cost function associated with the user defined logic region in the new  
6       location.

1       14. (Original) The method of Claim 13, wherein evaluating the cost function comprises:  
2              determining a timing of the system associated with the user defined logic region in the  
3       new location; and  
4              determining routing resources requirements associated with the user defined logic region  
5       in the new location.

1       15. (Currently Amended) The method of Claim 12, further comprising~~wherein~~  
2       determining possible locations to place ~~at~~the component in the user defined logic region  
3       comprises:  
4              assigning an initial location for the component in the user defined logic region; and  
5              evaluating a cost function as the user defined logic region and the component are moved.

1       16. (Currently Amended) The method of Claim 15~~2~~, further comprising~~wherein~~  
2       determining possible locations to move the component from the possible locations to place the  
3       component independent of the constraints associated with the user defined logic region~~is~~  
4       ~~performed in response to the possible locations to place the user defined logic region and the~~  
5       ~~component not satisfying design parameters.~~

1       17. (Currently Amended) The method of Claim 162, wherein determining possible  
2 locations to move the component ~~from the possible locations to place the component independent~~  
3 ~~of the constraints associated with the user defined logic region~~ is performed in response to the  
4 possible locations to ~~place the user defined logic region and the component not satisfying user~~  
5 specified constraints.

1       18. (Currently Amended) The method of Claim 162, wherein determining possible  
2 locations to move the component ~~from the possible locations to place the component independent~~  
3 ~~of the constraints associated with the user defined logic region~~ is performed in response to  
4 having a threshold number of possible locations determined.

1       19. (Currently Amended) A method for designing a system on programmable logic  
2 devices (PLDs) using an electronic design automation (EDA) tool, comprising:  
3           having the EDA tool determining routing strategies for routing signals on the PLDs in  
4 response to user specified routing constraints that pertain to categories of routing resources to  
5 use; and  
6           having the EDA tool determining additional routing strategies for routing the signals on  
7 the PLDs where the additional routing strategies are independent of the user specified routing  
8 constraints.

1       20. (Original) The method of Claim 19, wherein determining routing strategies for  
2 routing the signals on the PLDs in response to user specified routing constraints comprises:  
3           selecting routing resources for a user specified signal on the PLDs in response to the user  
4 specified routing constraints; and  
5           selecting routing resources for a non-user specified signal on the PLDs without utilizing  
6 the user specified routing constraints.

1           21. (Original) The method of Claim 19, wherein determining additional routing  
2 strategies for routing the signals comprises selecting routing resources for the user specified  
3 signal on the PLDs independent of the user specified routing constraints.

1           22. (Original) The method of Claim 19, wherein determining additional routing  
2 strategies for routing the signals is performed in response to the routing strategies not satisfying  
3 user specified routing constraints.

1           23. (Original) The method of Claim 19, wherein determining additional routing  
2 strategies for routing the signals is performed in response to the routing strategies not satisfying  
3 design parameters.

1           24. (Original) The method of Claim 19, wherein determining additional routing  
2 strategies for routing the signals is performed in response to a threshold number of routing  
3 strategies being determined.

1           25. (Currently Amended) A machine-readable medium having stored thereon sequences  
2 of instructions, the sequences of instructions including instructions which, when executed by a  
3 processor, causes the processor to perform:  
4           determining a first location on a programmable logic device (PLD) to place a user  
5           defined logic region~~generating options for utilizing resources on programmable logic devices~~  
6           ~~(PLDs)~~in response to user specified constraints for placement of the user defined logic region;  
7           and

8        determining a second location to place the user defined logic region wherein the second  
9        location is determined refining the options for utilizing the resources on the PLD where the  
10      options are independent of the user specified constraints for placement.

1        26. (Currently Amended) The machine-readable medium of Claim 25, wherein  
2        determining the second location refining the options for utilizing the resources is performed in  
3        response to the first location options not satisfying design parameters.

1        27. (Currently Amended) The machine-readable medium of Claim 25, wherein  
2        determining the second location refining the options for utilizing the resources is performed in  
3        response to the first location options not satisfying the user specified constraints.

1        28. (Currently Amended) The machine-readable medium of Claim 25, wherein  
2        determining the second location refining the options for utilizing the resources is performed in  
3        response to having a threshold number of first locations determined options generated.

1        29. (Currently Amended) The machine-readable medium of Claim 25, wherein  
2        determining the second location refining the options for utilizing the resources is performed in  
3        response to a triggering event.

1        30. (Currently Amended) The machine-readable medium of Claim 25, further  
2        comprising wherein generating options for utilizing the resources on the target device comprises  
3        determining locations to place components within user-defined logic regions on the target device.

1        31. (Currently Amended) The machine-readable medium of Claim 30, further  
2        comprising wherein refining the options for utilizing the resources on the target device by

3 ~~ignoring the user-specified constraints comprises~~ determining locations to place the components  
4 on the target device by removing constraints associated with the user-defined logic regions.

1       32. (Currently Amended) The machine-readable medium of Claim 25, further  
2 ~~comprising wherein generating options for utilizing the resources on the target device comprises~~  
3 determining routing resources to allocate to user specified signals on the target device in  
4 response to user specified routing constraints.

1       33. (Currently Amended) The machine-readable medium of Claim 32, further  
2 ~~comprising wherein refining the options for utilizing the resources on the PLD by ignoring the~~  
3 ~~user-specified constraints comprises determining routing resources to allocate to the user~~  
4 ~~specified signals on the PLD by removing the user specified routing constraints.~~